CLAIMS

1/ A bandpass filtering method in which two frequency transpositions are performed in parallel on an input signal (SE) for filtering using respective first and second upstream mixing signals (SM1, SM2) that are substantially in phase quadrature so as to obtain respective first and second transposed signals (ST1, ST2), and the two transposed signals are filtered respectively by two lowpass filters (F1, F2), the frequency of the transposition signals (ω_0) and the passband (B/2) of the low-pass filters being related to the frequency of the input signal (ω_e) and to the passband desired for the bandpass filter, then respective frequency transpositions are performed on the first and second filtered transposed signals (STF1, STF2) using two respective downstream mixing signals, and the sum or the difference of the two signals obtained in this way is taken, the frequency of the output mixing signals (SMV1, SMV2) is selected to be different from the frequency of the first and second mixing signals so that the output signal is transposed into a desired frequency range, the method being characterized in that a common oscillator (LO) is used which is coupled with a first phase shifter (MTM) to produce the upstream mixing signals and which is coupled with a second phase shifter (MTV) to produce the downstream mixing signals, and in that the phase shifters are used in opposite manner on the first and second signals so that each of said first and second signals (VT1, VT2) receives the phase-advanced output signal from one of the two phase shifters and the phase-delayed output signal from the other of the two phase shifters.

2/ A bandpass filter device comprising two parallel processing paths (VT1, VT2) connected between the input (BE) and the output (BS) of the device, each path comprising a lowpass filter cell (F1, F2) located between an upstream mixer (MA1, MA2) and a downstream mixer (MV1,

MV2), and transposition means (LO, MTM, MTV) delivering two respective upstream mixing signals which are substantially in phase quadrature to the upstream mixers (MA1, MA2), and two respective downstream mixing signals which are substantially phase quadrature to the downstream mixers (MV1, MV2), the device further comprising an adder or a subtracter (STM) connected to the outputs from the downstream mixers, transposition means being provided to deliver the downstream mixing signals at a selected frequency (ω_1) different from the frequency of the upstream mixing signals (ω_2) in such a manner that the output signal from the band-pass filter is transposed into a desired frequency range, the device being characterized in that it comprises a common oscillator (LO) coupled with a first phase shifter (MTM) for producing the upstream mixing signals and coupled with a second phase shifter (MTV) for producing the downstream mixing signals, and in that the phase shifters are connected in opposite manner so that each of the two parallel branches (VT1, VT2) receives the phase-advanced output signal from one of the two phase shifters and the phase-delayed output signal from the other of the two phase shifters.

3/ A device according to claim 2, characterized in that the ratio between the frequency of the upstream mixing signals (ω_0) and the frequency of the downstream mixing signals (ω_1) is equal to an integer ratio.

4/ A device according to claim 2 or claim 3, characterized in that the two phase shifters are constituted by circuits each presenting a cutoff frequency between their two phase-shifted outputs that is equal respectively to the frequency of the upstream mixing signals (ω_0) for the first phase shifter (MTM) and to the frequency of the downstream mixing signals (ω_1) for the second phase shifter (MTV).

5/ A device according to any one of claims 2 to 4, characterized in that it comprises an oscillator (LO) coupled to a first phase shifter (MTM) formed by an RC-CR circuit to deliver the upstream mixing signals, and an oscillator (LO) coupled to a second phase shifter (MTV) formed by a second RC-CR circuit to deliver the downstream mixing signals.

6/ A device according to claim 5, characterized in that the capacitors (C, C') of the first and second RC-CR circuits have the same capacitance value and the resistance values of said circuits are selected so that the ratio (n) of the value of the resistances of the second RC-CR circuit over the value of the resistances of the first RC-CR circuit is equal to the ratio (n) of the frequency of the upstream mixing signals (ω_0) over the frequency of the downstream mixing signals (ω_1).

7/ A device according to claim 5, characterized in that the resistors (R, R') of the first and second RC-CR circuits present the same resistance value, and the capacitors (C, C') of said RC-CR circuits are selected so that the ratio (m) of the capacitance values of the second RC-CR circuit over the capacitances value of the first RC-CR circuit is equal to the ratio (m) of the frequency of the upstream mixing signals (ω_0) over the frequency of the downstream mixing signals (ω_1).

8/ A device according to claim 5, characterized in that the capacitors (C, C') of the first and second RC-CR circuit have capacitance values in a ratio equal to an integer ratio, and in that the resistors (R, R') of the first and second RC-CR circuits present resistance values in a ratio equal to an integer ratio.

9/ A device according to any one of claims 5 to 8, characterized in that the RC-CR circuits are disposed in opposite manner so that each of the two parallel branches (VT1, VT2) receives the phase-advanced output signal from one of the two RC-CR circuits and the phase-delayed output signal from the other of the two RC-CR circuits.

10/ A device according to any one of claims 2 to 9, in combination with claim 4, characterized in that the oscillator (LO) is coupled to one of the first and second phase shifters (MTM, MTV) via at least one frequency transposition means.